

RESEARCH

FOCUS AREA

WATER AND WASTEWATER TECHNOLOGY

LEAD RESEARCHER

PROF. F.M. SWALAHA

Prof. Feroz Mahomed Swalaha is a Senior Lecturer in the Department of Biotechnology and Food Technology at the Durban University of Technology. He has worked extensively in the fields of biological wastewater treatment with the aid of mathematical modelling. Prof. Swalaha is currently working on modelling anaerobic digestion with genetic algorithms, applying constructed wetlands to urban water treatment and algal scrubbing of CO₂ emissions from waste industrial gases. He also maintains an interest in developing new technologies for the treatment of waterborne pathogens and surveying of pathogens such as *Legionella* spp. in domestic settings.

Currently, his group is investigating:

- Application of an evolutionary algorithm to enhance wastewater degradation and biogas production in a UASB reactor.
- Evaluation of macrophyte rhizofiltration and microbial biofilms for organic and inorganic nutrient removal in a constructed wetland system.
- Mitigation of carbon dioxide from industrial gas using indigenous microalgae.
- Prevalence of pathogenic *Legionella* spp. in hot water technologies in South Africa.
- Cold plasma inactivation of waterborne pathogens.

Prof. Feroz Swalaha
DTech

h-index	4
Masters students (current)	4
Doctoral students (current)	5
Doctoral students (complete)	2
Collaborators	

RESEARCH OUTPUTS 2015/2016

NATIONAL CONFERENCES

1. Bhola V.K., Swalaha F.M. & Bux, F. (2016) Physiological responses of carbon sequestering microalgae to elevated carbon regimes. SASM: Environmental/ Agricultural Biotechnology session. 18 January 2016.
2. Mogany, T., Swalaha, F.M. And Bux, F. (2016) Media and physiochemical optimisation for enhanced phycocyanin production in *Cyanothece* sp. SASM 18 January. Applied Biotechnology session 20/01/16.
3. Enitan, A. M., Kumari, S., Swalaha, F. M., Adeyemo, J. and Bux F. (2015). Fluorescent in situ hybridisation application for the detection of methanogens in a full-scale UASB reactor treating brewery effluent. South African Young Water Professional (YWPs), Pretoria, South Africa, 16-18 November. (Accepted for poster presentation)

INTERNATIONAL CONFERENCES

1. Enitan, A. M., Swalaha, F. M., Adeyemo, J., Kumari, S. and Bux, F. (2015). Influential parameters on the performance of a full-scale UASB reactor and biomethane production during brewery wastewater treatment. 16 WaterNet/WARFSA/GWP-SA Symposium Integrated Water Resources Management and Infrastructure Planning for Water Security in Southern Africa Conference, Mauritius, 28 – 30th October. (Accepted for oral presentation).
2. Enitan, A. M., Adeyemo, J., Kumari, S., Swalaha, F. M. and Bux, F. (2015). Characterisation of Brewery Wastewater Composition. World Academy of Science, Engineering and Technology Conference, Rome, Italy, 17-18 September. (Accepted for oral presentation).

JOURNAL PUBLICATIONS

1. Enitan, A.M., Adeyemo, J., Swalaha F.M., Kumari, S. & Bux, F. (2016). Optimisation of biogas generation using anaerobic digestion models and computational intelligence approaches. *Reviews in Chemical Engineering*. (DOI 10.1515/revce-2015-0057).
2. Enitan, A. M., Swalaha, F.M., Adeyemo, J. & Bux, F. (2016). Performance evaluation and microbial analysis of a full-scale biogas producing UASB reactor treating industrial wastewater. *Physics and Chemistry of the Earth* (Accepted for Publication, August, 2016).
3. Bhola, V., Swalaha, F.M., Nasr M., Kumari S., & Bux, F. (2016). Physiological responses of carbon sequestering microalgae to elevated carbon regimes. *European Journal of Phycology* (DOI 10.1080/09670262.2016.1193902).
4. Enitan, A.M., Adeyemo, J., Kumari, S., Swalaha F.M. & Bux, F. (2015). Characterisation of Brewery Wastewater Composition. *International Journal of Environmental, Chemical, Ecological, Geological and Geophysical Engineering* 9(9): 919-922.
5. Deepnarain, N., Kumari, S., Ramjith, R., Swalaha, F.M., Tandoi, V., Pillay K., & Bux F. (2015) A logistic model for the remediation of filamentous bulking in a biological nutrient removal wastewater treatment plant. *Water Science and Technology*, 72 (3):391-405.
6. Enitan, A. M., Swalaha, F.M., Adeyemo, J. & Bux, F. (2015) Anaerobic Digestion Model to Enhance Treatment of Brewery Wastewater for Biogas Production using UASB Reactor. *Environmental Modeling and Assessment*, 20,6 673-685.